

**Counting Temporal Parts:  
A Semantic Solution to ‘Metaphysical’ Puzzles of Identity**

**Mark Moyer**  
Department of Philosophy  
**Rutgers University**  
26 Nichol Ave.  
New Brunswick, NJ 08901  
mmmoyer@eden.rutgers.edu  
(732)-628-0907

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## **Abstract**

Lewis presents the problem of reconciling temporal parts theory with our actual counting practices. He offers a solution, but one that, he says, conflicts with intuition, an evil that is merely lesser than other evils. I argue that the problem dissolves of its own once we spell out the semantics of temporal parts talk, for the semantics for tensed sentences quite naturally provides a temporally relative notion of things being 'the same'. Conflating this relation with absolute identity has resulted in the *appearance* of a problem, the *appearance* of a conflict with intuition.

This counting problem is, upon closer inspection, a general one. Though Lewis presents the counting problem as arising only in fantastic cases of fission and fusion, the same problem underlies everyday cases of lumps of clay being formed into statues. Thus we find our *recherché* counting problem is of general interest to those who worry about material constitution. Moreover, the problem is not with counting but with 'identity'. Finally, the problem has troubled temporal parts advocates, yet the problem and its solution can easily be stated in terms independent of one's ontology. Thus, the problem is best seen not as a metaphysical puzzle, but as a semantic confusion.

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Lewis presents the problem of reconciling temporal parts theory with our actual counting practices. He offers a solution, but one that, he says, conflicts with intuition, an evil that is merely lesser than other evils. I argue that the problem dissolves of its own once we spell out the semantics of temporal parts talk, for the semantics for tensed sentences quite naturally provides a temporally relative notion of things being 'the same'. Conflating this relation with absolute identity has resulted in the *appearance* of a problem, the *appearance* of a conflict with intuition.

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A now outdated view has it that puzzles of philosophy are, at root, our confusions about our language. According to the view, we should not look to the world to give us the answer but at our words to untangle the question; such puzzles need to be dissolved, not solved. I will not argue for such a broad claim. But I will try to dissolve some puzzles. Though considered metaphysical puzzles about what exists, I will argue that the problems and their resolutions are independent of ontology. These are, I claim, simple semantic puzzles requiring only a better understanding of our own words.

### **The Counting Problem**

According to traditional temporal parts theory, objects are time worms, and, just as objects have spatial parts, so too do they have temporal parts. My nose is a spatial part of me, me during my first year is a temporal part of me. A temporal slice, goes the story, is a spatially maximal momentary temporal part. The theory is *also* typically characterized by giving a suggestive fragment of a semantic

theory. Because I wish to be quite careful about the new terminology being introduced, I will distinguish English from the new language, Wormese, and specify truth conditional equivalences between them. Thus we have, where  $t_u$  is the time of utterance:

“Tom *was* tall” is true in English iff “there is some slice of Tom before  $t_u$  that is tall” is true in Wormese.<sup>1</sup>

Note that English contains tensed predications while Wormese contains only tenseless predications.<sup>2</sup>

Lewis, though, reports a problem for the temporal parts account. Imagine that Al splits into two fully functional humans, much as a cell divides to become two complete cells. After the time of fission,  $t_f$ , there are two people there, call them Cal and Hal. Cal and Hal have identical memories of their lives up through  $t_f$  but different memories of what comes after  $t_f$ . If people are time worms defined by mental continuity, it seems that there are two overlapping time worms which are persons, one beginning with ‘Al’ and continuing with ‘Cal’, the other beginning with ‘Al’ and continuing with ‘Hal’. One isn’t committed to this by the temporal parts view alone, but details of the identity conditions for persons are independent of the present argument.<sup>3</sup> Lewis then asks,

what do we say when a stage shared between two (or more) people is present? Strictly speaking, two people are present there by way of that one stage, but the fact that there are two is extrinsic to the time in question. It seems for all the world that there is only one. We will have to say something counter-intuitive, but we get a choice of evils.<sup>4</sup>

Lewis’s solution is that in practice we often do not count objects *by identity*; rather, we count *by identity-at-t*, for some relevant time  $t$ , where two objects are identical-at- $t$  iff their temporal slices at  $t$  are identical. Appealing to this new account of our counting, Lewis hopes to reconcile the temporal parts account with our actual counting practice. Of course, we also need rules saying when to use

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<sup>1</sup>Some proponents and opponents of temporal parts would insist that temporal parts talk carries with it an ontological commitment to temporal parts, a commitment that is not captured in the translation schema I have sketched. They might insist that “the slice of Tom at  $t_u$  is tall” is true in Wormese iff “Tom is tall” is true in English *and* there are temporal parts. The claim is debatable, but my argument is independent of the issue; the same problems occur for either of these truth conditions.

<sup>2</sup>Saying that something ‘is tall’ in Wormese is to say (or it at least entails) that it was, is, and will be tall at all times at which it exists.

<sup>3</sup>Lewis’s paper, “Survival and Identity,” is an argument that this *is* the most reasonable thing to say.

<sup>4</sup>*On the Plurality of Worlds*, p. 218.

which sort of counting. As Lewis suggests, though, we can see, at least roughly, how such a theory might go.

How many persons entered the duplication center yesterday? We may reply: [Cal] entered and [Hal] entered, and no one else; although [Cal] and [Hal] are not identical today, and are not identical simpliciter, they were identical yesterday. So counting by identity-yesterday, there was only one. Counting by identity-today, there were two; but it is inappropriate to count by identity-today when we are talking solely about the events of yesterday. Counting by identity simpliciter there were two; but in talking about the events of yesterday it is as unnatural to count by identity as it is to count by identity-today.<sup>5</sup>

## **Dissolving the Counting Problem: The Semantics of ‘the Same’**

It seems that temporal parts theory conflicts with common sense. According to temporal parts theory,

- 1) Persons are time worms.
- 2) Two worms exist before the fission.
- 3) Therefore, not one but two people exist before the fission.

And, goes the thinking, this clearly conflicts with the intuition that says that only one person existed before the fission. Ergo, temporal parts theory conflicts with intuition. Presumably, this is why Lewis concludes that “We will have to say something counter-intuitive.”<sup>6</sup> And, apparently, the counter-intuitive claim we will have to buy is that our counts are, “strictly speaking”, false.

This, as I say, is the lesson one learns reading Lewis. However, I think this lesson is wrong. Temporal parts theory does *not* conflict with intuition. Temporal parts theory does *not* need to be rescued by a pragmatic theory of counting. And, finally, our counts are *not*, strictly speaking, false. This, I will argue, is the picture that emerges once we fully appreciate the ambiguity Lewis is pointing out. In fact, I will be endorsing almost everything Lewis says, though I hope to generalize some here, provide a novel perspective there, and, in the end, endorse an alternative methodology.

I begin by arguing that the ambiguity Lewis notes, our counting in two ways, is an ambiguity inherent in the semantics of temporal parts theory. The semantics therefore, will help us understand the ambiguity, for, properly understood, the common sense claim that one person entered the duplication

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<sup>5</sup>“Survival and Identity,” p. 63.

<sup>6</sup>*On the Plurality of Worlds*, p. 218.

chamber does not conflict with the theoretical claim that two people entered. To establish this, though, we must examine the semantic theory already presented.

Lewis has given us a schema for evaluating sentences predicating temporally intrinsic properties.

Incompatible temporary intrinsic properties do not all belong to the same thing. A persisting thing perdures. It consists of temporal parts, or stages, different ones at different times, which differ in their intrinsic properties. When I sit and then stand, bent stages are followed by straight stages. Each stage has its shape simpliciter. Shape is truly intrinsic.

To be sure, my shapes belong in the first instance to my stages, and in a derivative, relational way to the whole of me. Persisting thing  $x$  is bent at time  $t$  iff some stage of  $x$  is at  $t$  and is bent.<sup>7</sup>

What perhaps is not clear is that there are two things here being called ‘bent’, an intrinsic property, which is instantiated by slices, and a temporally relative ‘property’ or, more properly, a relation to a time, which is had by persisting things.<sup>8</sup> Thus, Lewis is saying that for a large class of predicates, we can evaluate sentences involving a relation to a time in terms of a corresponding temporally intrinsic property. ‘Bent’, for example, is therefore ambiguous, referring in Wormese to an intrinsic property and in English to a relation.

According to Lewis, then, how we evaluate a sentence depends upon whether the predicate can be evaluated directly as the instantiation of a corresponding temporally intrinsic property. For those that can, to say of a persisting object that it has the temporally relative property at  $t$  is to say that a slice of that object at  $t$  has the corresponding temporally intrinsic property. Thus, formalizing this a bit, and using an ‘at  $t$ ’ operator in terms of which tenses are to be analyzed, we have the following:<sup>9</sup>

“At  $t$ ,  $\Phi_R(w_1, w_2, \dots, w_n)$ ” is true in English iff “ $\Phi_I(S(t, w_1), S(t, w_2), \dots, S(t, w_n))$ ” is true in Wormese,

where  $\Phi_R$  is a temporally relational property corresponding to the temporally intrinsic property  $\Phi_I$ , and  $S(t, w)$  is the slice at  $t$  of the worm  $w$ .<sup>10</sup> For those sentences that are not so simply evaluated using a

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<sup>7</sup> “Rearrangement of Particles,” p. 66.

<sup>8</sup> I thank Sally Haslanger for making this point to me (in correspondence).

<sup>9</sup> I thank Cian Dorr for suggesting some of these formalizations to me.

<sup>10</sup> Everyday quantifiers are also temporally intrinsic. If this is not recognized, more puzzles, or conflicts with intuition, will also emerge. For example, the sentence “Everyone was poor in 1931” may seem correct even if Caesar was not poor in 1931. I suggest this is no metaphysical puzzle but shows that ‘every’ should be taken to quantify only over those things existing at the time in question.

corresponding temporally intrinsic property, the analysis will be similar but will involve slices at times *other* than  $t$ . For example, the analysis of the predicate ‘is growing’ will be analyzed in terms of intrinsic properties of *a series of slices* rather than the intrinsic properties of *a single slice*. Roughly, a worm will be growing at  $t$  iff throughout an interval about  $t$ , the slices of the worm are of continuously increasing size. Being an ex-marine, being a daughter, and other temporally extrinsic properties will require similar, though perhaps more complex analyses.<sup>11</sup>

As so far spelled out, the semantics do not say how to interpret English sentences containing “is the same as”, “one”, or “two”, so we must extrapolate a bit. The key question is whether such expressions invoke the temporally intrinsic property of a single slice at  $t$  or if instead they invoke the properties of other slices. One possibility is that they invoke the temporally intrinsic properties of *all* of a thing’s slices: a worm  $w$  and a worm  $w^*$  are ‘the same’ iff at *all* times  $t$  at which  $w$  or  $w^*$  exists, the slice of  $w$  at  $t$  is identical to the slice of  $w^*$  at  $t$ . Another possibility is to treat ‘the same’ as we treat predicates invoking the temporally intrinsic properties of a single slice. “Cal is tall at  $t$ ” is true, according to the semantic theory already specified, just in case the time worm to which “Cal” refers (viz., Al/Cal) has a temporal slice at  $t$  which is tall. “Al is taller than Bob at  $t$ ” similarly depends upon a temporal slice of Al at  $t$  being taller than a slice of Bob at  $t$ . Following the same pattern, “Cal and Hal are the same at  $t$ ” would be true iff the slice of Cal at  $t$  is identical to the slice of Hal at  $t$ . More generally, our second possible interpretation is that  $w$  and  $w^*$  are ‘the same’ at  $t$  iff the slice of  $w$  at  $t$  and the slice of  $w^*$  at  $t$  are identical.

There are two different relations that ‘the same’ might pick out. The first is not relative to a time, requiring *all* temporal slices of the worms to be identical — and, presumably, all world slices or

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<sup>11</sup> Notice that claims involving temporally extrinsic predicates require *an additional* quantification over times or slices compared to claims involving temporally intrinsic properties. Moreover, the slices quantified over are those that form a worm (or worms) that includes the slice in question but that might not be identical to the original worm. Thus, if I fuse with retired Sgt. Bilker tomorrow, then it is true to say “I will be an ex-marine”, even though the worm to which ‘I’ refers has no slice that is a marine. It seems we can view temporally extrinsic predicates as quantifying over the slices of the worm(s) centered upon the slice existing at the time indicated by the tense. I will be an ex-marine, e.g., in virtue of some future slice of the worm to which “I” refers, bearing the I-relation to some past slice that is a marine.

counterparts as well.<sup>12</sup> This relation I call absolute identity since it is symmetric, reflexive, transitive, and can be characterized by Leibniz's Law where two things are absolutely identical iff any property had by the one is had by the other, *including temporal and modal properties*. The second relation is temporally, as well as modally, relative. This relation is symmetric, reflexive, and transitive only with respect to a given time and world; moreover, it can be characterized by Leibniz's Law only if we restrict the properties invoked to temporally and modally intrinsic properties. I call this relation 'sameness'; it is the relation Lewis calls 'identity-at-t' or 'tensed identity'.

I have been discussing the expression 'the same', but there are several closely related expressions. If b and c are 'the same' thing, then b *is* c, b and c are *one* thing rather than *two*, and there is *a thing* rather than *some things*. Thus, any conclusions we draw regarding the interpretation of 'the same' will carry over to such related expressions. Our question is not simply whether 'the same' names absolute identity or sameness but also whether 'one', 'two', plurals, 'is', and the like are absolute or temporally relative. Just as the semantics for temporal parts theory give us two possible readings for 'the same', so too does it allow for an ambiguity of the related expressions.

I contend that typically — or, as a fallback, sometimes — everyday uses of 'the same' and related expressions invoke sameness rather than absolute identity. This, I say, explains why people say that only one person entered the duplication chamber. Thus,

"Cal was the same as Hal at t" is true in English iff "the temporal slice of Cal at t and that of Hal at t are identical" is true in Wormese.

The intuitive claim that only *one* person entered the duplication center individuates people at a time using sameness, i.e. using the temporally intrinsic properties of the people. Temporal parts theory does commit us to the claim that *two* people entered the chamber, but this claim individuates people using absolute identity, i.e. using temporally extrinsic properties of the people. Thus, the two claims are not in conflict. 'One' and 'two' are ambiguous.

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<sup>12</sup> I am arguing for the temporal relativity of 'the same'. The modal relativity should follow in a similar fashion.



How is ‘my’ solution to the counting problem different from Lewis’s? I don’t think it is. Lewis claims that we count in two different ways, one absolute, one temporally relative. So do I. What he calls ‘identity’ I call ‘absolute identity’, what he calls ‘identity-at-t’ I call ‘sameness’. Lewis says b and c count as one thing, in the latter sense, iff at the relevant time there is only one slice shared by b and c. I concur.

What differences I have with Lewis are more matters of emphasis or perspective. First, Lewis speaks of ‘identity-at-t’, but whether you believe objects span multiple worlds or not the same counting problem occurs in the modal case as well. Our problem so far has been that we sometimes say that non-identical people as ‘the same’; but this is little different than the modal puzzles Lewis wrestles with, where “sometimes we think of distinct but similar [objects] as if they were identical.”<sup>13</sup> Thus, it seems we are dealing with the same problem, that we should speak of ‘identity-at-t-at-w’. Second, Lewis talks only about *counts* being relative to times, but the temporal relativity of ‘one’ and ‘two’ is part and parcel of the temporal relativity of ‘is’, ‘the same’, and our use of plurals. Before the fission, Cal *was* Hal; Cal and Hal were *the same person*. Finally, the temporal relativity of these expressions is of a piece with the temporal relativity of so many common predicates such as ‘bent’ and ‘tall’. Thus, once temporal parts theory gives a semantics for predicates which invoke a temporally intrinsic property, and once we note that ‘the same’, ‘one’, and the like *are* such predicates sometimes, then we see that there is no counting problem, no conflict with intuition.

Lewis sometimes sounds like he is solving the counting problem, and thereby fixing temporal parts theory, by tacking on a pragmatic counting theory. Instead I would say that the *appearance* of a counting problem was already dissolved by the semantics for temporal parts theory.<sup>14</sup> The appearance

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<sup>13</sup> “Individuation by Acquaintance and by Stipulation,” p. 377.

<sup>14</sup> Could our counting be a pragmatic matter, despite the fact that our semantics for tense seem to capture the temporal relativity so nicely? It doesn’t fit the mold of a Gricean implicature. When someone says, “Only one person entered the chamber” we cannot understand this as literally saying that one *slice* entered the chamber and implicating something additional, for what would the implicature be? One might think our counting is instead a case of restricted quantifiers. Just as we say “There is nothing in the box” even though there is plenty of dust and oxygen, since we are restricting our attention to macrophysical objects, so too, one might think, when we say “One person entered the chamber” we are restricting our attention to the ‘temporally intrinsic number’ of people. Three things count against such a reason for taking our counts to be pragmatic. First, many have argued that cases of contextually restricted quantifiers are part of semantics, rather than pragmatics. Second, with shifts in context

of a counting problem comes with the failure to distinguish absolute identity from sameness. Cal is not absolutely identical with Hal, since he has different temporally extrinsic properties than Hal: after the fission Cal will leave the chamber first, Hal will leave second. But at the time he entered the duplication chamber Cal was ‘the same’ person as Hal, since any differences between Cal and Hal are extrinsic to that time. Lewis tells us that ‘*Strictly speaking*, two people are present’;<sup>15</sup> but this is somewhat misleading since the truth conditions for “One person was present” are satisfied in every way. We do not say that Monica and Jaimie are not, strictly speaking, the same height in virtue of their having different heights long ago; similarly, it seems we are confusing absolute identity and sameness when we say that Cal and Hal are not, strictly speaking, the same person.

## Addressing Some Objections

So far I have suggested that everyday uses of ‘the same’ at least *sometimes* pick out the temporally relative relation of sameness. My thesis does not require it, but in fact I think that everyday uses of ‘the same’ *almost always* pick out sameness. I think that when the conception of a thing involves a representation of it as temporally extended, then we naturally individuate it by its temporally extrinsic properties; i.e. we naturally use absolute identity. But when we conceive a thing without picturing it as extended in time, when our image of it is more like a temporally frozen snapshot, then we naturally individuate it solely by its temporally intrinsic properties, i.e. using sameness.<sup>16</sup> Thus, our talk of time worms is suffused with counts and identifications invoking absolute identity, while our usual talk of objects invokes only sameness.

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different responses are evoked in the case of the box but not in the case of our counts. Talk about the danger of dust and wondering whether the box is a hazard for those allergic to dust, and people will then *deny* that there is nothing in the box. Talk about how *after* the fission there will be two people needing two social security numbers and yet people will still insist that *before* the fission there was only one person in the duplication chamber. Third, it is hard to see how restricting our quantifiers could do the job, whether it is pragmatics or semantics. It is not that we are considering fewer people when we count people. If so, which of Cal and Hal is omitted? Besides, Lewis seems to avoid this tack (*On the Plurality of Worlds*, p. 218).

<sup>15</sup>*On the Plurality of Worlds*, p. 218. And, in the modal case, Lewis uses the phrase “strictly and literally speaking.” “Individuation by Acquaintance and by Stipulation,” p. 377.

<sup>16</sup> These descriptions of when we invoke sameness and when we invoke absolute identity are, I hope, at least vaguely suggestive.

Philosophical uses of ‘the same’ and ‘identical’, on the other hand, are usually set against a background in which ‘the same’ and ‘identical’ are taken to be synonymous and identity is taken to be that relation characterized by the indiscernibility of identicals, including temporal and modal indiscernibility. In other words, philosophers usually have absolute identity in mind. The problem, of course, is that philosophers are also driven by their everyday intuitions concerning what is ‘the same’ as what, and, conflating sameness and absolute identity, they therefore discover philosophical puzzles requiring the denial of common sense in one way or another.

To support my claim that our use of ‘the same’ *normally* invokes sameness, let me first cite Lewis’s data. We say that only one person entered the duplication chamber. And, in fact, *whenever* we count objects, our judgment would not be revised if we were to learn of a later fission. I have three cats. Were I to learn that one is undergoing fission, I would still insist that I’ve had three cats. In short, *any* normal case in which we count is a case in which we would not revise our judgment in the face of fission.

One possible objection is that cases of fission are imaginary cases, so we should not rely upon our intuitions so heavily. That is, if absolute identity and sameness only come apart in bizarre cases, then intuition, grounded as it is in the actual, is a poor basis for arguing that ‘the same’ invokes sameness rather than absolute identity. As Lewis notes, “we’re talking about something that doesn’t really ever happen to people except in science fiction stories and philosophy examples, so is it really so very bad that peculiar cases have to get described in peculiar ways?”<sup>17</sup> But, in fact, the data does *not* come merely from science fiction cases. The lump of clay sat on my workbench for a month before I shaped it into this ungainly statue that I have placed upon the mantle. The statue did not exist before this morning, when I crafted it, but the lump of clay did; hence, the statue and the lump of clay cannot be absolutely identical. On the other hand, intuition says that only *one* thing sits on the mantle. If asked where the lump of clay went, I would explain, “That is it! That statue *is* the lump of clay!” Or imagine that my wife tells me that she has seen the hideous statue that Cindy mentioned, but she now wants to

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<sup>17</sup> *On the Plurality of Worlds*, p. 219.

see the beautifully sparkling lump of clay that Bob mentioned. I would reply that “I shaped the clay into a statue, so you’re mistaken to think there are two objects. The statue and the lump of clay are *the same thing*”. The statue and the lump differ in their temporal and modal properties, yet in most contexts it is quite unnatural to say that there are two objects. More generally, *whenever* an object changes its material constitution, we have another case of fission or fusion. Thus, the case for the temporal relativity of ‘the same’ is well supported by everyday contexts, not merely with *recherché* contexts appealing to fission.

Another possible objection is that there is no need to appeal to anything other than identity, for when someone claims that Cal and Hal are one person or the same person, they are asserting absolute identity. It is just that they are wrong in this case. Usually absolute identity and sameness correlate, so it is natural for someone seeing what appears to be a single person to judge there to be a single person, though in fact it could turn out that they are mistaken if something unusual happens, such as fission. However, this objection ignores the fact that the evidence is not simply that a person, while seeing Al, says that there is a single person. The same person, after watching the fission and seeing Cal and Hal walk out of the chamber will *still* insist that before the fission there *was* one person. Similarly, it is not just the person who doesn’t know the history of the statue that says a single object sits upon the mantle; even the sculptor, who is fully aware that there was a lump of clay long before there was a statue, will agree. It is not that we are inferring the absolute identity of Cal and Hal using their temporally intrinsic properties at *t*, and occasionally we are mistaken; rather, since we don’t revise our judgments in light of the temporally extrinsic differences between Cal and Hal, we are judging sameness.

I have tried to argue that we can understand ‘the same’ as temporally relative in almost all everyday contexts. But, comes a third objection, this means *b* and *c* can be said to be ‘the same’ only relative to some particular time, and, hence, this precludes saying that *b* at *t*<sub>1</sub> is the same as *c* at *t*<sub>2</sub>. That is, there doesn’t seem to be any means of having a cross-temporal relation whereby *b* and *c* are ‘the same.’ And, some may insist, everyday English clearly allows such talk: “I *am* the same person who waved to you *yesterday*.” Likewise, “Cal, who is standing here *now*, and Hal, the person who will

marry Sheila *next year*, are the very same person.” How can we accommodate such sentences with a relation that only relates things at a single time?

The answer is that while the relation invoked by ‘the same’ does not span times, the things related commonly do, and thus these things can be identified by properties they have at other times. ‘I’ refers to a worm; ‘the person who waved to you yesterday’ also picks out a worm. The sentence ‘I am the person who waved to you yesterday’ merely says that the former worm and the latter worm have a slice in common at the time indicated by the tense, i.e. at the time of utterance. I am, of course, absolutely identical to the person who waved to you yesterday, since ‘I’ and ‘the person who waved to you yesterday’ refer to absolutely identical worms. But in any case in which absolute identity holds, so too will sameness, since sameness is a weaker relation than absolute identity. Sameness and absolute identity both hold between I and the person who waved to you yesterday.

But if both relations hold in the normal case, why do I think that ‘the same’ is asserting sameness rather than absolute identity? Wouldn’t it be better to say that sameness is invoked only in strange cases of fission and absolute identity is invoked in the normal case? No, for the same reasons cited before. First, the normal case is potentially a fission case. A friend asked me yesterday how many cats I have; I replied three. If Sasha were later to strangely undergo fission, I would not then say that I had been wrong, that at the time the friend asked I actually had four cats. Second, we needn’t appeal to literal fission. There is only one thing lying on the couch, a cat. What about the collection of cat parts? The cat and the collection cannot be absolutely identical since they have different modal properties, but still, I insist, there is only one thing on the couch.

The sentence “I am the same person who waved to you yesterday” claims that temporally relative identity obtains *now* between myself and the person who waved to you yesterday, though these things *now* related by sameness had and will have other important features obtaining at other times, e.g. the latter’s waving to you yesterday. Similarly, Cal and Hal are *now* ‘the same,’ though it is also true that Hal *will* marry next year. Hal persists through time: *next year* he will marry, but *now* he is ‘the same’ as Cal. Thus, a statement claiming that two things ‘are’ the same can be understood as relative to the present moment even if it identifies the relata in terms of properties they have at past or future times.

Statements of sameness can also appear in the future or past tense. Next week Cal *will not be the same* as Hal, for after the fission tomorrow, Cal will enter the monastery as Hal pursues Sheila. In contrast, not only *am* I the one who waved to you yesterday, but I also *was* the one who waved to you yesterday. In general, then, the content of a statement of things being ‘the same’ might include both the sameness of the things in question at t *and also* characteristics that one or the other has at other times.

Sider objects to Lewis’s theory, insisting that “it is part of the meaning of ‘counting’ that counting is by identity.”<sup>18</sup> Indeed, Sider is following up on Lewis’s own suggestion that “It may seem far-fetched to claim that we ever count persons otherwise than by identity simpliciter.”<sup>19</sup> But while the intuition they are wielding is hard to deny, as an objection it rests upon the same confusion of languages or of senses of ‘identity’. When Sider insists that counting is ‘by identity’, what relation does he have in mind by this, absolute identity or sameness? Since Lewis has pointed out the ambiguity of our counts but not the ambiguity of expressions such as ‘the same’, it may be that Sider is simply insisting that we only count b and c as one thing when b and c are ‘the same’. In fact, I think the natural way to interpret the intuition that ‘we count by identity’, insofar as this is an everyday intuition, is as the claim that the *everyday* usage of ‘one’ and ‘two’ should correspond to the *everyday* usage of ‘the same’. But as long as our theory recognizes the temporal relativity of the latter expression along with the former, it satisfies this intuition easily. Counting *is* ‘by identity’, as long as both ‘counting’ and ‘identity’ here are understood according to the semantics for temporally relative expressions already adumbrated.

Could Sider instead be insisting that it is part of the meaning of our counts that they are by *absolute* identity, i.e. that counts individuate objects also by properties the objects *will* have in the past or future or *might* have? If so, this is no part of the everyday intuition about the meaning of ‘counting’ but is a theoretical claim which requires an argument. Moreover, if Sider eschews the temporally relative sense of ‘identity’ and insists that we count by absolute identity, then even on *his* account counting is not ‘by identity’, for according to his account Cal and Hal are *not* absolutely identical, since

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<sup>18</sup>“All the World’s a Stage,” p. 440.

<sup>19</sup>“Survival and Identity,” p. 63.

they have different temporal and modal properties, which dictates that they are not absolutely identical — all despite the fact that they are counted as one.<sup>20</sup>

We usually intend our claims about time worms to individuate the worms by all temporal and modal properties and thus to be tenseless predications, even when specific times are mentioned which would normally suggest a tensed interpretation. Thus, the question “How many (person-constituting) *time-worms* entered the duplication center?” is read most easily as asking how many worms *there are* (*untensed*) such that at some time they *did* (*tensed*) enter the duplication center. A preference for tenseless predications of time worms makes sense since worms are, typically, pictured in their temporal entirety, usually with their temporal dimension represented spatially — hence the name ‘worm’. The analogous question, “How many *persons* entered the duplication center?” is instead most naturally read as focusing on the one time, abstracting away from facts of worm multiplicity, which are *extrinsic* to that time. Thus, even if persons *are* worms, “There are two worms here,” an untensed claim individuating objects with respect to temporal and modal properties, does *not* contradict the intuition that “there is a single person here,” a tensed claim individuating objects only with respect to temporally intrinsic properties.

Perhaps it *also* makes sense to individuate worms by their temporally intrinsic properties and individuate persons by their temporally extrinsic and modal properties. Is it then a problem that there being two worms here entails there being two persons here, where both are read as tenseless claims, i.e. claims individuating things by their modal and temporally extrinsic properties? To the contrary, this result is intuitively quite palatable once we cash it out more explicitly as an untensed claim, perhaps paraphrasing it as the claim that throughout history there are (i.e., there did, do, or will exist) two people (viz., Cal and Hal) who are currently here.

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<sup>20</sup>On Sider’s account, an object has temporal and modal properties in virtue of counterpart relations. Thus, while it may be true to say that the *slice* of Cal at *t* and the *slice* of Hal at *t* were identical, it will not be true to say that Cal and Hal themselves, i.e. *the persons*, were identical since they differ temporally and modally in virtue of the different temporal and modal counterpart relations invoked by the different names. And since absolute identity requires the same temporal and modal properties, as I have stipulated, then ipso facto Cal and Hal are not absolutely identical.

Worms are persons, according to Lewis. Thus, names of worms and names of persons corefer. But such names apparently do some extra semantic or pragmatic work, since talk of ‘worms’ most naturally evokes a context in which the referents are individuated by their modal and temporal properties while talk of ‘persons’ most naturally evokes a context in which the referents are individuated by their temporally intrinsic properties. Thus, simply saying that worms are persons can be misleading, since names of worms and persons cannot be intersubstituted, *salve veritate*. Before the fission we would say that Cal and Hal are the same person, but we would say Cal and Hal are different worms. Again, there is no contradiction since in the former case we are making a temporally relative claim, saying Cal and Hal *presently* are the same person, while in the latter case we are making a non-relative claim, saying Cal and Hal are not (i.e., *not always*) the same worm.

## Sider’s Alternative

The appearance of a counting problem stems from a confusion of different languages. We easily conflate tensed with untensed predications, talk of objects individuated by their temporally intrinsic properties with talk of objects individuated by their temporally extrinsic and modal properties. Sider, however, also tries to fix the counting problem, but in a different way. Unfortunately, in seeking to *solve* a problem, Sider alters the semantics and thereby instead *creates* a problem.

The alternative Sider advocates is that persons and objects are not time *worms* but time *slices*.<sup>21</sup> This is supposed to solve the counting problem because a person who will undergo fission is, on his theory, but a single slice. And yet after the fission there will be two people since there are two slices at that time.

I have argued that the claim that persons are worms can be misleading, that names of the two cannot be intersubstituted; similarly, the claim that persons are slices can be misleading. Slices are momentary things, they do not change, and, as Sider himself points out, there are an infinitude of slices

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<sup>21</sup>“All the World’s a Stage,” (1996). The stage view is not entirely new with Sider. Perry’s “Can the Self Divide” (1972) considers it, defends it against the most obvious objections, but ultimately opts for a view half way between the stage view and what he calls the ‘branch’ view (essentially Lewis’s account). And, even further back, in *Word and Object* (1960), Quine also talks of time slices (e.g., p. 52).



that occupied my study yesterday, even though I was the only person there.<sup>22</sup> In short, the logic of object and person talk is not the same as the logic of slice talk. But though Sider's claim may evoke the incredulous stare, we can explain why it sounds so wrong-headed by appealing to the difference between coreference and synonymy. Sider is claiming that terms referring to persons and terms referring to slices corefer, but not that they function semantically the same in *all* ways.

So let's instead look at his semantics, which tell a fuller story. Sider tells us that "Tom" refers to the *current* slice, presumably the slice that exists at the time of utterance. It seems what he means is the current slice *of the worm we associate with the name "Tom."* Past and future tense predications are then true iff the present slice bears the correct relation to a past or future slice with the appropriate property. Fair enough, so far.

Distinguishing English from Sider's technical language, call it Sliceese, here is a sketch of Sider's semantics, where 's' abbreviates "the slice of the time worm picked out by 'Tom' at the time of utterance":

"Tom *was* hot" is true in English iff "there is a slice that is prior to s, is I-related to s, and is hot" is true in Sliceese.

The I-relation is Lewis's genidentity relation, the "unity relation for persons" which, as Lewis describes it, holds among the slices of a person; thus, according to Lewis "a person is a maximal I-interrelated aggregate."<sup>23</sup>

With this understood, we can see that in fact Sider's semantics are quite similar to Lewis's! Let's compare the two. Recall that on Lewis's account we have:

"Tom *was* tall" is true in English iff "there is some slice of Tom before the time of utterance that is tall" is true in Wormese.

Both say that some slice is hot. Both require that slice to pre-date the time of utterance. And both make use of the same time worm, that which is associated with the name "Tom." We are left with the

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<sup>22</sup>"All the World's a Stage," p. 448.

<sup>23</sup>"Survival and Identity," p. 59.

single difference between the two accounts: Sider's semantics require the slice to be *I-related to the current slice* of the appropriate worm, while Lewis's semantics simply require that the slice must be *a slice* of the appropriate worm. But since the I-relation is, for Lewis, the unity relation of persons, i.e. the relation between all slices of a person, isn't it the same thing whether we 1) take the current slice of the worm and look for another slice I-related to it, or 2) simply look for *a* slice of the worm?

Actually, the two methods I've described do depart substantially if the appropriate worm has no current slice, e.g. for sentences about Socrates. But in such cases Sider tells us to use an alternative semantics, one that says merely, "that at some point in the past, there is a Socrates-stage that is wise."<sup>24</sup> But this is just what Lewis's semantics specify!<sup>25</sup> It may seem, then, that Sider's account does not differ from Lewis's.

Sider's semantics *do* in fact differ when it comes to cases of fission or fusion. Recall Al, who splits into Cal and Hal. Consider "Tomorrow, Cal will be tall," uttered shortly before the fission.<sup>26</sup> Using Lewis's semantics, this means that some slice of the appropriate worm (Al/Cal) that exists tomorrow is tall. Intuitively, this makes sense. On Sider's semantics, however, we take the current slice of the appropriate worm, i.e. a slice pre-dating the split, and the sentence is true iff there is some tall slice existing tomorrow that is I-related to this slice. But *both* the slices called "Cal" *and* the slices called "Hal" are I-related to the current, pre-fission slice! Thus, in general, any claims made before the split about Cal will incorrectly turn out to be claims about Cal *or* Hal!

Worse yet, on Sider's semantics, claims made about a particular time vary in truth value depending on the time of utterance. If fission occurs 1:00 PM Tuesday, and everyone is short except

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<sup>24</sup>"All the World's a Stage," p. 450.

<sup>25</sup>This would seem to be quite a problem for Sider's account. First, it does not give us a single unified account as Lewis's does; instead it specifies one set of truth conditions if the referent currently exists and another set if it does not. Second, it is hard to believe that the semantics for everyday sentences depend upon whether the object still exists. Thus, to know what "Feynman played the bongo drums" means, must one know whether Feynman is still alive or not? It seems not.

<sup>26</sup>Sider (in correspondence) has pointed out that "Cal" may fail to refer in such a case. I am imagining a case where the name is introduced before the split, such as "Let's dub Cal the one who first comes out of the duplication center." For those who think fixing reference in such a way is problematic, the whole issue can be avoided by considering instead the symmetrical case of *fusion* and the sentence "*Yesterday* Cal *was* tall" uttered *after* the fusion. This, though, is not wholly satisfactory, for the case for psychological continuity is much weaker with fusion.

Hal who grows tall Wednesday morning, “Cal is tall now,” uttered Wednesday at noon, would be false while “Cal will be tall Wednesday at noon,” uttered Tuesday at noon, would be true. And, “Cal will be tall Wednesday” would be true when uttered Tuesday at noon yet false when uttered two hours later. Surely one desideratum for any semantics is that the time of utterance should not affect the truth value of an eternal sentence!

## **Abstracting Away From Ontological Commitments**

I started out addressing a very specific problem, viz. how temporal part theorists can reconcile their theory with our actual counting practices. I tried to show that the problem is not quite so specific, that our counting is of a piece with our judgments of which things are ‘the same’, and that this temporally relative notion of sameness falls out quite naturally within a semantics of tense. I would like now to generalize the problem and its solution further. After all, most of the work that we have done applies just as well to endurantists as to perdurantists, i.e. just as well to those who deny temporal parts as to those who espouse them. Endurantists must also somehow deal with intuitions that “Al and Cal are the same person,” “Al and Hal are the same person,” and yet “Cal will be a different person than Hal.” Thus, the counting problem is not a problem specific to temporal parts theory. Moreover, though we have focused on how temporal parts advocates can address this problem, in fact the approach we have been considering does not, on reflection, require the existence of temporal parts and should therefore be equally appealing to endurantists. Lewis’s semantic account certainly is a *perdurantist* account, for he cashes out ‘identity-at-t’ in terms of having identical temporal slices at t. But we can abstract away from this commitment, since the resolution does not require a commitment to any particular underlying metaphysic. To make this point, I now turn to the problem of temporary intrinsics.

According to Lewis, the explanation of how change is possible, i.e. of how a single thing can be bent and, after changing, that same thing can be straight, lies in the fact that its being bent consists in one of its temporal slices being bent while its being straight consists in a distinct temporal part being straight. The explanation is analogous to the explanation of how it can be that right now I am bent and straight:

my legs are bent though my back is straight. In both the spatial and the temporal case, it is distinct parts that are bent or straight simpliciter.

This is Lewis's answer to the problem. But what is the problem? That is, what exactly is this ubiquitous 'problem of change' or 'problem of temporary intrinsics'? Lewis presents it by describing someone who changes from being bent to being straight and asking "How is such change possible?"<sup>27</sup> I think, however, that there are two different problems that should be distinguished.

As Sider presents the problem, "There is an apparent contradiction — that I both am, and am not, straight-shaped — that must be resolved in some way. How?" Sider is presenting one problem, that of *an apparent contradiction* that must be resolved. It *seems* that both P and not-P, so we need to do some explaining to show *that* there is not — and *why* there is not — a contradiction.

But if this is the problem, then this is indeed a superficial puzzle. Does a person's being bent conflict with a person's being straight? Not as long as the person is bent *at one time* and is straight *at another*. In other words, the puzzle speaks simply of being bent, but as we all know an object is bent *relative to some time*. A *tensed* predication of bentness involves the object, the bentness, *and* the time(s) at which the object is bent. We would have a contradictory tensed predication only if we were to say that Lewis is bent at some time and Lewis is straight at that same time, which, presumably, is not what is being claimed. Being bent at t and straight at t' is no contradiction.

Is the supposed contradiction instead thought to involve an *untensed* predication? It is unclear what an untensed predication of bentness would mean. Perhaps something is tenselessly bent iff it is bent at *some* time. But then something tenselessly being bent and tenselessly being straight would not be contradictory, since something can be bent at one time and straight at another. Perhaps instead something is tenselessly bent iff it is bent at *all* times at which it exists. Then it would be contradictory for Lewis to be both tenselessly bent and tenselessly straight. But Lewis is not tenselessly bent in this sense. Whichever way we go we find no contradiction.

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<sup>27</sup>On the Plurality of Worlds, p. 204.

The appearance of a puzzling contradiction comes when we conflate our tensed and our tenseless predications, saying that “Lewis is bent” contradicts “Lewis is straight”, which is certainly true if these are read as tensed predications of temporally relative properties, and yet we add that in fact “Lewis *is* bent” and “Lewis *is* straight”, claims one can maintain only on an untensed reading. That is, the appearance of contradiction comes with the attempt to capture temporally relative English with a logic that ignores temporal relativization. This puzzle is dissolved simply by disambiguating temporally relativized and non-relativized predications. If we simply want to explain away this apparent contradiction, we need not descend to the speculations of deep metaphysics, for this is a simple problem of understanding the logic of tensed predications of English.

This, as I say, is *one* problem, a problem of semantics or ‘surface metaphysics’, as it were. There is also the related problem of ‘deep metaphysics’, viz., the problem of explaining *how* things have temporally relative properties. That is, there is also the question of what ontological structures *underlie* such relative properties. Again, our analogy with spatial relativity might help to illustrate the distinction. If I say that right now the Pacific Ocean is 68 degrees Fahrenheit and is also 52 degrees Fahrenheit, one unfamiliar with temperatures might see this as a contradiction. But once we recognize that temperatures are had by bodies *at certain locations*, that temperatures are spatially relative, then the appearance of a contradiction dissolves. What remains, though, is the deeper metaphysical issue of what sort of ontology underlies location-relative properties, whether, for example, we believe in the arbitrariness of parts and therefore say that the Pacific is a sum of an infinitude of non-overlapping objects, each of which instantiates spatially intrinsic properties, or we instead say that temperatures supervene on some brute relations to times.

In fact, it is this latter, deeper problem that Lewis seems to intend by ‘the problem of temporary intrinsics’. Saying nothing about any contradiction, he says he knows of only three solutions to the problem of temporary intrinsics, and he then sketches three ontological stories that might explain how things have time-relative properties.<sup>28</sup> He thinks there are fairly decisive reasons for rejecting two and

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<sup>28</sup>*On the Plurality of Worlds*, p. 204.

therefore for accepting temporal parts theory. His reasons and how good they are, though, are not our present concern. I wish merely to distinguish the two problems we have briefly examined. The first is the apparent contradiction, which can be resolved simply by distinguishing tensed from untensed predications, by noting that everyday predications of shape, e.g., are temporally relative. The second is the problem of spelling out what ontological structure underlies, and thus makes possible, temporal relativity. For the child or non-native speaker who is genuinely confused about seemingly conflicting claims about Lewis being bent and Lewis being straight, the proper remedy is to inform her about the relevant temporal relativity, e.g. emphasizing that Lewis *was* bent but is *now* straight. This is only a problem about words. Introducing temporal parts would be not only unwise but also a change of subject. For the metaphysician, on the other hand, the words were never a source of confusion in the first place; the problem lies deeper.

Finally, let us apply our lesson to the counting problem. Here we again have a problem with words, that of reconciling theoretical claims that Cal and Hal are different people with everyday claims that before the fission Cal and Hal were the same person. The resolution of this problem comes when we distinguish everyday claims of sameness from philosophical claims of absolute identity, the former a temporally relative relation, the latter not. Recognizing this dissolves the appearance of a conflict, but, as with the apparent contradiction of a thing being bent and being straight, this leaves us with the question of what underlies this temporal relativity.

There are two different semantic problems here, the solution of one requiring the recognition that ‘bent’ and its ilk are temporally relative and the solution of the other requiring the recognition that ‘the same’ and its kin are *also* temporally relative. But a single deeper problem underlies both of these semantic problems, viz. determining what ontological structure underlies temporal relativity. In the case of the problem of temporary intrinsics, the controversy has focused upon the deeper issues of ontology, for, after all, who doesn’t know that a thing always has a shape *at some time*? Shape was chosen precisely because it is understood by all to be temporally relative. Thus, this problem is not specific to shape but is about ‘temporary intrinsics’ or ‘change’ in general. In the case of the counting problem, in contrast, it actually *is* interesting to discover a difference between everyday claims of sameness and

philosophical claims of absolute identity. Thus, the counting problem *is* a problem specifically about counts, sameness, and related notions. Once you recognize that claims of sameness are temporally relative, the question of what ontology underlies predications of sameness is simply the problem of what ontology underlies *any* temporally relative predications, i.e. is simply Lewis's problem of temporary intrinsics.

The moral of all of this is that the counting problem is a semantic problem, a problem independent of the underlying metaphysics. Lewis has given an answer to the counting problem in terms of temporal parts, thereby taking up both problems simultaneously. But this entangles what are separate problems. Perhaps temporal parts theorists are right and something has a temporally relative property now in virtue of having a current temporal part that has the corresponding intrinsic property. Or perhaps they are wrong and something has a property now in virtue of having a disguised relation to the current time. In either case, the same linguistic evidence suggests that being 'the same' is temporally relative, and this is all that is necessary to resolve the counting problem. Conversely, whether or not I am correct about sameness being temporally relative, the arguments for and against temporal parts remain the same.<sup>29</sup>

What this means is that while we have resolved the counting problem using Lewis's perdurantist semantics, the only part of those semantics in fact needed to solve the problem is that which makes explicit the temporal relativity of sameness. Thus, instead of saying

"Cal and Hal will be the same" is true in English iff "for some time  $t$  after  $t_0$ , a slice of Cal at  $t$  is

identical to a slice of Hal at  $t$ " is true in Wormese,

we can simply say,

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<sup>29</sup>In fact, we can go further with our semantic analysis of sameness, as Wiggins has done. He claims that material objects  $b$  and  $c$  are 'the same' iff  $b$  "is composed [at  $t$ ] of the same matter as"  $c$ . (See *Sameness and Substance*, p. 197n1.19) Thus, he specifies not only that being 'the same' is temporally relative, but also what this relation consists in. But this claim is also independent of the underlying ontology. If Wiggins is right, then we can *either* understand  $b$  and  $c$  being the same as 1)  $b$  and  $c$  having the same material *temporal part* at  $t$ ; as 2)  $b$  and  $c$  being related to some collection of material objects by a relation that relates the object composed, the collection composing it, *and* a time; or as 3)  $b$  and  $c$  instantiating the 'composed of' relation to a collection of material objects, where the instantiation relation is temporally relativized; etc. That is, if Wiggins' analysis is consistent with at least three different ontological pictures.

“Cal and Hal will be the same” is true in English iff “at some time  $t$  after  $t_0$ , Cal and Hal are the same at  $t$ ” is true in Tenselessese,<sup>30</sup>

something to which a person of *any* metaphysical persuasion can agree. We can explain any apparent contradictions, whether between contrary properties of an object or between everyday and philosophical counts of objects, by recognizing that being ‘bent’ and being ‘the same’, are temporally relative, that being ‘the same’ in this sense is different than being ‘identical’ in the philosopher’s sense.

In a similar vein, those speculating on the so-called conditions of ‘identity across time’ of persons and other objects can reformulate the perdurantist’s genidentity relations among slices as more general genidentity relations among property instantiations. Taking up Parfit’s argument that identity and mental continuity cannot be the same, Lewis argues,

... we do indeed have a discrepancy of formal character between identity and any suitable relation of mental continuity and connectedness.

But what does that show? Only that the two relations are different. And we should have known that from the start, since they have different relata. He who says that what matters in survival is a relation of mental continuity and connectedness is speaking of a relation among more or less momentary person-stages, or time-slices of continuant persons, or persons-at-times.<sup>31</sup>

We clearly must appeal to different relata, but why appeal to *slices*? After all, the theory appeals to *mental* continuity, not slice continuity, so why not simply spell this out in terms of a continuity of mental properties? Rather than saying that a person is that which sums a series of temporal parts which have psychologically continuous properties, we can say a person is that which itself has psychologically continuous properties. If persisting objects have properties *at times*, it is believes-at- $t$  and other such psychological ‘properties’ that we want to be continuous, not the slices. Such a formulation leaves open whether, and if so in what sense, a person is to be identified with or analyzed as some matter, but if we wish to capture simply the commitment to mental continuity and not some further commitment, this independence is precisely what is wanted.<sup>32</sup> Thus, for the purpose of debating what

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<sup>30</sup>Lepore and Ludwig argue that a semantics of tense must be formulated in a tenseless language in order to capture temporal relativity properly. See “Truth Conditional Semantics for Tense”.

<sup>31</sup>“Survival and Identity,” p. 58.

<sup>32</sup>This is especially relevant to summing temporal parts, for while it may make sense to say that the atoms of an object are ontologically prior to the object, temporal parts theorists have explicitly denied that we are to understand



matters in survival or what the identity conditions are of people or objects, appealing to temporal parts obfuscates the issue, bringing an unnecessary commitment to an underlying metaphysic.

The counting problem, like the problem of dissolving the contradiction of something being bent and being straight, and like the problem of giving a theory of personal identity over time, is independent of the underlying ontology. Exploring the ontology is, no doubt, a worthwhile task, but it is a separate task.<sup>33</sup>

## Methodology

We began looking at what appears to be an esoteric metaphysical puzzle, how temporal parts theory can be reconciled with our intuitions about counting objects that undergo fission. As we progressed, we began to see that the problem is in fact much more general. The trouble is not merely counting objects that undergo fission but counting everyday objects, such as statues and lumps of clay. And the problem is not merely a counting problem but a problem about notions of identity. Finally, we have focused on the temporal relativity of sameness, but similar arguments should extend the thesis for modal relativity as well. Recognizing the ambiguity of ‘the same’ will therefore, I believe, go a long way in resolving problems of material constitution.

However, where I most depart from standard accounts of these puzzles is in methodology. To solve these traditional ‘metaphysical’ problems I have applied *semantics*. Others have used what they have taken to be metaphysical intuitions — e.g. the intuition that the statue and the lump of clay are the same — assuming all the while that they know what they mean by them being ‘the same.’ The intuition has been taken by many to be that the statue and the lump are necessarily identical, but then we face the problem of how we can intuit necessary facts when presented only with what is actual or how we can intuit what will be from what obtains now. As a matter of methodology, these intuitions have been taken to be *prima facie* truths which, when found to conflict with other *prima facie* truths, can be discarded.

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temporal slices as prior to the persisting object. See Lewis, "Survival and Identity," p. 77; Sider, "Four-Dimensionalism," pp. 207-208.

<sup>33</sup>Other arguments for the independence of various ‘metaphysical’ problems and one’s metaphysics include Robinson's "Can Amoebae Divide Without Multiplying?" and Perry's "The Problem of Personal Identity", pp. 9ff.

Lewis tells us that “theories can earn credence by their clarity and economy; and if they disagree a little with common opinion, then common opinion may be corrected even by a philosopher”;<sup>34</sup> apparently many have taken this to heart, for we find metaphysicians saying that statues do not exist, that the lump ceased to exist when the statue was formed, that there really are two objects co-located on the mantle, that Al dies during fission, and other wondrous things.<sup>35</sup>

In contrast, I have investigated the *semantics* of ‘the same.’ The analogy of location-relative identity helps illustrate the point.<sup>36</sup> Highway 238 and highway 45 are the same highway here, though they split up 20 miles north of here. Talk of rivers does not work this way. At the confluence of the Missouri and the Mississippi, one of the two necessarily ends. Typically, talk of highway sameness is location relative while talk of river sameness is not. Likewise, persons are typically individuated relative to a time while worms are not. This is a mundane semantic fact, not to be mistaken for a deep truth of metaphysics. We could talk of rivers as we talk of roads. We could talk of persons as we talk of worms, individuating them using absolute identity. We could, but we don’t, for obvious practical reasons. We are concerned with how many objects, individuated with respect to temporally intrinsic properties, are *now* on the mantle. Our semantic study reveals that the intuition that Cal and Hal are the same has no implications across times and worlds. The puzzle of how ‘one’ thing can have contradictory temporal or modal properties is thus not so much a metaphysical puzzle as a semantic confusion. Before arguing the metaphysics of identity, it is important to get clear on what we mean by ‘identity’. And if, as some say, confusion is rife in philosophy, then we would do well to turn to some semantic housecleaning to see how many other ‘metaphysical’ puzzles thereby disappear.<sup>37</sup>

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<sup>34</sup> “Holes,” p. 9.

<sup>35</sup> *On the Plurality of Worlds*, p. 218.

<sup>36</sup> Cf. Lewis’s “Survival and Identity,” p. 64; Stalnaker’s “Counterparts and Identity,” p. 134.

<sup>37</sup> I’d like to thank Troy Cross, Kit Fine, Tim Maudlin, Brian McLaughlin, Ernie Sosa, Ted Sider, and Adam Wager for reading versions of this paper and giving very useful comments.

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